REMARKS

The application has been carefully considered in light of the Office Action dated May 17, 2005. Claims 1, 4 to 6, 11 and 12 are pending in the application, of which Claims 1, 6, 11 and 12 are independent. Reconsideration and further examination are respectfully requested.

Claims 1, 3 to 6, 11 and 12 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3 to 6, 11 and 12 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,883,821 (Komaki) in view of U.S. Patent No. 5,644,509 (Schwartz). Reconsideration and withdrawal of this rejection are respectfully requested.

The present invention concerns performing image processing on image data expressed in plural components by using a multi-dimensional look-up table. During image processing, a weight table is generated having weight values calculated using the distance between positions of input data and a grid adjacent to the input data. The weight value is calculated using an integer computation wherein the weight value is multiplied by a constant that is a power of 2 greater than the intervals of the grids. Once generated, the weight value, which corresponds to plural components of input image data, is obtained by referring to a weight table and used in an integer computation to interpolate processed image data corresponding to the input image data, with output data of grids corresponding to the input image data, and the constant as a divisor.

Turning to specific claim language, amended independent Claim 1 is directed to a data conversion method of performing image processing on image data expressed in plural components by using a multi-dimensional look-up table, and outputting processed image data. The method includes the steps of: setting grid positions of the multi-dimensional look-up table

which has grids arranged at non-uniform intervals; generating a weight table to store weight values based on the set grid positions, wherein the weight value is calculated by an integer computation using distance between positions of input data and a grid adjacent to the input data, and is multiplied by a constant which is a power of 2 greater than the intervals of the grids; obtaining the weight values corresponding to the plural components of input image data by referring to the weight table; obtaining output data of grids of the multi-dimensional look-up table which corresponds to the input image data; and calculating the processed image data, which corresponds to the input image data, by interpolation using the obtained output data, the obtained weight values and the constant, wherein the interpolation is executed by an integer computation and uses the constant as a divisor.

In contrast, weighting coefficients as disclosed in Komaki correspond to dx, dy and dz values as shown in Figs. 11 to 37. These dx, dy and dz values are distances between an interpolating objective point and grids as shown in Fig. 2. However, the weighting coefficients of Komaki are not generated using an integer computation using distance between positions of input data and a grid adjacent to the input data, and are not multiplied by a constant which is a power of 2 greater than the intervals of the grids.

Furthermore, the grids disclosed by Komaki are arranged at uniform intervals with the intervals assigned a value represented by 2^n where n represents the number of lower bits of the input signal (Komaki, column 13, line 4). Thus, "2^n" as used in Komaki is a value representing a grid interval and does not define a constant multiplied by a weight value as in the present invention. Furthermore, Komaki shows equations for interpolation in Figs. 11-37. These interpolation equations do not include multiplication as a multiplicand of 2^n. In other words, the grid interval represented by "2^n" of Komaki is not a weight value that is multiplied by a constant that is a power 2 greater than intervals of the grids with the obtained weight value used in an

integer computation to interpolate processed image data corresponding to the input image data. Thus, the value of "2^n" used to represent the uniform grid intervals of Komaki is different from the constant that is a power 2 greater than intervals of the grids of the present invention.

Schwartz discloses a method of creating a color transformation table having non-uniform grid point spacing. The table is created by combining a grid table having uniform grid point spacing with input and output tables having non-linear characteristics. That is, Schwartz discloses a creation method for a transformation table, but Schwartz is silent regarding using such a transformation table in the interpolation process of the present invention. In Fig. 2, Schwartz does disclose use of an interpolation process. However, Schwartz is entirely silent on how such an interpolation process works. More specifically, Schwartz fails to disclose any feature of an interpolation related to the interpolation method of the present invention. That is, Schwartz fails to disclose a weight value calculated by an integer computation using distance between positions of input data and a grid adjacent to the input data which is multiplied by a constant which is a power of 2 greater than the intervals of the grids. Nor does Schwartz disclose obtaining the weight values corresponding to the plural components of input image data by referring to the weight table, obtaining output data of grids of the multi-dimensional look-up table which corresponds to the input image data, and calculating the processed image data, which corresponds to the input image data, by interpolation using the obtained output data, the obtained weight values and the constant, wherein the interpolation is executed by an integer computation and uses the constant as a divisor.

In light of the deficiencies of Komaki and Schwartz as discussed above, Applicant submits that amended independent Claim 1 is now in condition for allowance and respectfully requests same.

Amended independent Claims 6, 11, and 12 are directed to an apparatus, a computer program product storing a computer readable medium having a computer program code and a computer readable medium storing recorded data, respectively, substantially in accordance with the method of Claim 1. Accordingly, Applicant submits that Claims 6, 11, and 12 are also now in condition for allowance and respectfully requests same.

The other claims in this application are each dependent from one of the independent claims discussed above and are therefore believed allowable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the allowability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our Costa Mesa, CA office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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